

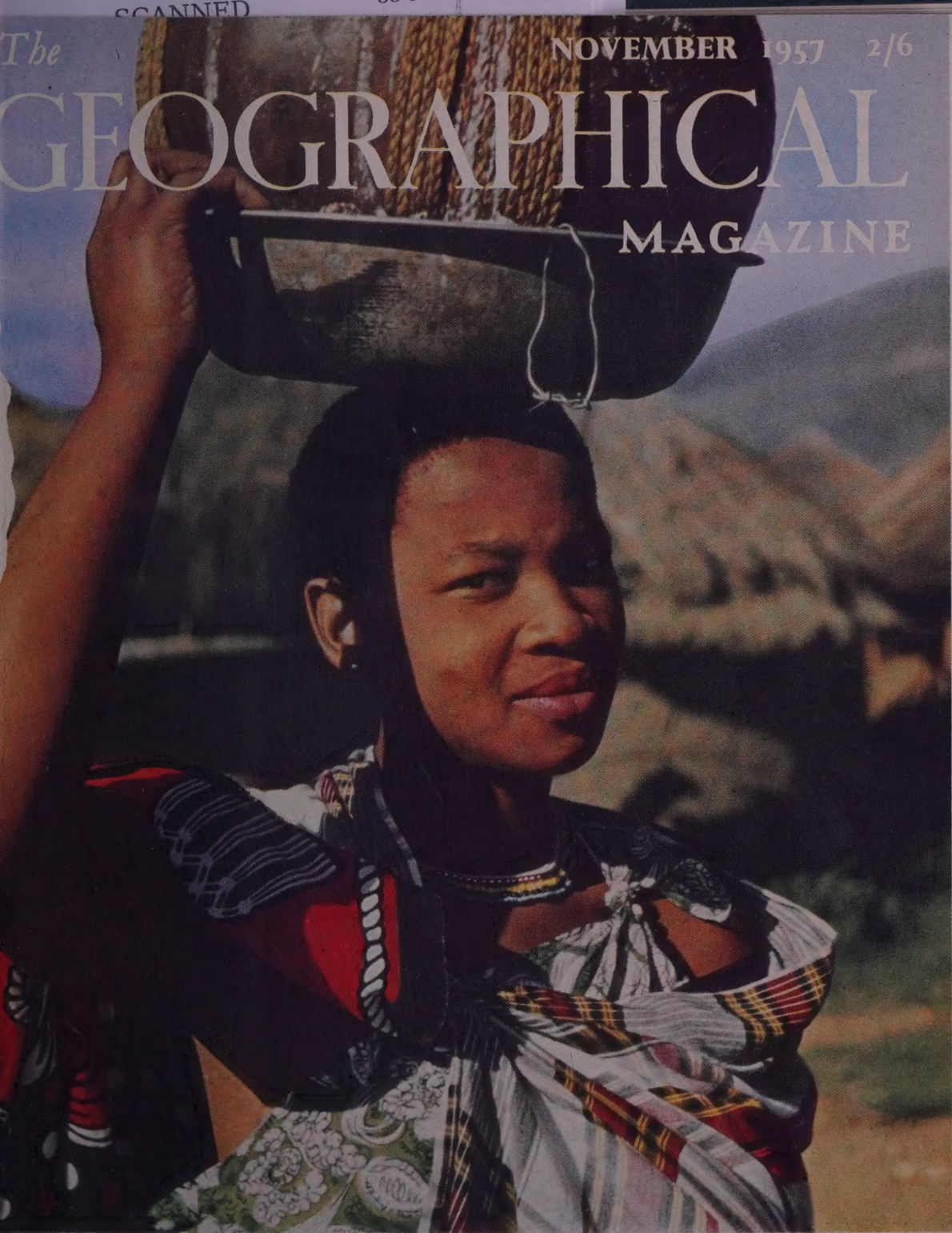
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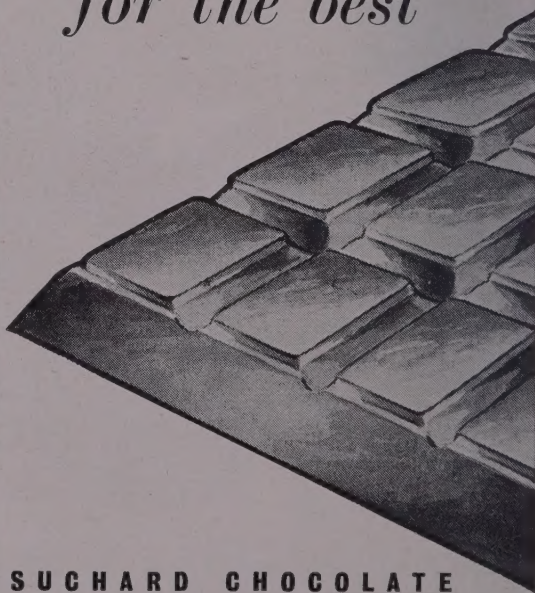
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The Incwala Festival in Swaziland

by GWENDOLEN M. CARTER and PHYLLIS A. GARDNER

Dr Carter, Professor of Government, Smith College, Massachusetts, and Mrs Gardner, painter to the Chamber of Mines, Johannesburg, were invited by the British Government to attend the Festival of the First Fruits in Swaziland while the former was gathering material for her book, The Politics of Inequality: South Africa since 1948 which Thames and Hudson are to publish next January

THE slight Swazi girl passed mild native beer around our circle; she knelt as she handed the gourd to the Queen Mother who was resplendent in a black leopard-skin hanging from one shoulder and had a circlet of wooden pegs around her high-piled hair. The hot morning sun beat into the enclosure within the Queen Mother's kraal at Lobamba. We could hear the steady thump-thump and occasional shouts of hundreds of warriors practising their dancing in the cattle-byre in anticipation of the ceremonies which would begin once the King's soothsayers decided the propitious moment. Suddenly the sound ceased. We looked at each other excitedly. The moment had arrived: the Incwala was about to start.

We had come to Swaziland at New Year for the Festival of the First Fruits, the most sacred ceremony of the Swazi people. All male Swazis participate in the great Incwala at least once in their lives. Many of them come year after year, streaming over the Swazi hills with their shields and assegais in their hands, or coming from as far away as Johannesburg where so many of them work. Only a few Europeans ever see the festival, however, for the British wisely guard it for the Swazis themselves. A hundred or two hundred official visitors may come on the high day of the festival. We were to be lucky enough to be there for the week-long period. Already we had bumped along the dusty roads in a half-ton Ford truck with a dozen Swazi warriors in the back, laughing and chattering excitedly about the coming ceremonies. Now we left the Queen Mother's kraal and, with three others in the back, bounced over the rough veld eager to catch sight of the warriors on their way to the King's kraal to begin the festival.

"There they are," called our British driver. Below us were the warriors threading their way down the hill, splashing through the

stream with their shields and assegais held high over their heads, and climbing up the other side. We watched till they were almost at the top. Then we raced back to the road in the truck and by the long way around to the kraal of the Paramount Chief, Sobhuza (the Swazis call him their King), for the send-off of the *lusekwane* boys.

When we arrived, a vast crescent of warriors in cowtail cloaks and leopard-skin loincloths had formed in front of the gateway to Sobhuza's kraal. Each warrior had his oxhide shield and dancing-stick. Suddenly a cry: "The King comes"—a thousand warriors uttered the royal salute, a shrill whistle, and Sobhuza took his place in front of them. Then the women and children of the royal household, in brilliantly coloured cotton cloths, came out of the kraal and, facing the crescent of warriors, began with them the ceremonial dance. The men's bodies swayed rhythmically till abruptly each made a great stamp forward with the right foot; and they chanted continuously while the women and girls with long light wands in their hands executed a more lively dance towards and then back from the crescent. Sometimes a thousand male fists were flung in the air, sometimes their sticks were pointed to the ground; most dramatic of all was the quick movement in which all their oxhide shields were turned to form a many-coloured wall as they surged forward and then returned to take up the rhythmic swaying once more.

For hours the dance continued under the brilliant sky . . . then suddenly there was silence. One by one the old Indunas, the councillors, went to the King. He gave them the last instructions for the march in which the young boys would fetch the sacred *lusekwane* branches to build the sanctuary hut. Then the Indunas and the boys moved off at a jog-trot for this long trek to the mountains. Only those boys who are pure, it is



All photographs by D. A. Gosnell

(Above) The march to the mountains during the Incwala: the Festival of the First Fruits in Swaziland. The young boys set off on an all-night trek to fetch lusekwane branches for building the sanctuary hut.
(Below) At dawn they hasten back. Only the virtuous, it is said, can deliver their branches unfaded





(Above) *The boys carry the lusekwane into the Queen Mother's cattle-byre. At the entrance is a broad, patch of wet cattle-dung, through which they have to plunge as part of their initiation into manhood.*
 (Below) *Later, the sacred branches, symbolizing strength and fertility, are stacked round the sanctuary*



said, can bring back the lusekwane unfaded. They must travel fast to be back by dawn to deliver the sacred branches which symbolize the strength and fertility for which the Incwala stands.

At dawn next morning, rubbing the sleep from our eyes, we were at Lobamba, but the boys were there before us. From the bare veld of the day before had sprung a young forest of lusekwane. The boys were in a high pitch of excitement from their ordeal, but before they could eat or drink they had to deliver their branches to the big cattle-enclosure of the Queen Mother.

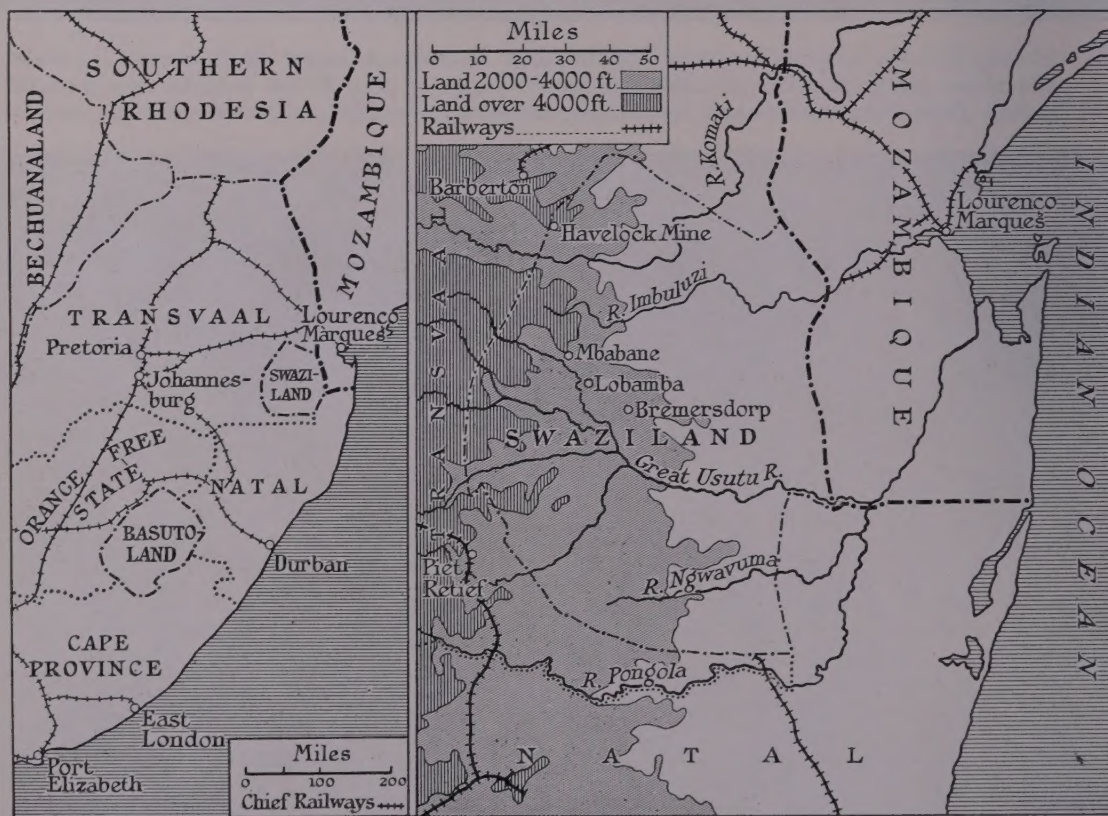
From now on the ceremonies were held in this big kraal, an enormous place enclosed by a fence of dry tree-trunks. Where we stood it was high with grass and weeds, but at the opposite side where the boys entered was a broad patch of soft black wet cattle-dung.

In came the first boy carrying his huge branch high over his head. He sank up to his knees in the soft dung but struggled on. One by one the others followed him, forming themselves into rows of four as they left the soft mire. Then, flinging their branches on

the ground, they leapt high in the air to show their strength and vitality, for this ceremony is part of their initiation to usher them to manhood.

When the boys had grouped themselves at one side, the big kraal filled with warriors, women and children, who danced again as we had seen them the day before at Sobhuza's kraal. Chanting and making their slow rhythmic dance they formed a great pattern of movement almost mesmeric in its effect. We had a sense of approaching climax.

The ceremonial killing of the sacrificial bull is the climax of the third day. When we returned to the kraal, the sanctuary hut had been built with the lusekwane branches. Two thousand warriors, in full regalia with feathered head-dresses, cowtails swinging from their wrists, leopard-skin loin cloths and cowtail cloaks, were chanting and dancing again, making a pattern of movement against the mountains of Swaziland. Here and there on curly black heads were red feathers, the sign of royal blood. The King at first danced in the front line with his regiment, that is, those of his own age-group, but soon was led to the sanctuary hut for the





All colour reproductions are from Kodachrome

A group of spectators on the fourth day—the Great Day—of the Incwala: behind them is the high fence of the enclosure. Clad in brightly coloured draperies, they have crowded into the Queen Mother's cattle-byre to watch the ceremonial dancing





(Opposite) Sobhuza, the Paramount Chief, whom the Swazis call King. He is known to them as "Yingwenyama", meaning the Lion. (Above) Stamping and chanting, the warriors of the Paramount Chief dance in homage. Each has a dancing-stick and an oxhide shield. The magnificence of their ceremonial dress—leopard-skins and cowtails, head-dresses of sakabula feathers and ostrich plumes—adds impressively to the splendour of the great Incwala, which many of them have attended year after year. (Left) A group of the Paramount Chief's unmarried daughters join in the celebrations. Holding thin reeds and arrayed in bead belts, scarlet sashes, giraffe-hair necklaces and royal red feathers, they dance lithely in the enclosure



A daughter of the Paramount Chief carrying a gourd of Swazi beer at the Incwala. This young girl came from a Johannesburg domestic science school for the ancient New Year ceremony of her people

ceremonies to give him strength for the coming year, and through him the Swazi nation.

First appeared the Bemanti, the priests, carrying calabashes with the water they had collected from flooded rivers and spume from the crests of waves of the sea. Then a dozen cattle were driven through the lower gate, some red-and-white, some black and some an ashy grey. "Which will be the sacrifice?" everyone was asking. All at once a bull bolted for the gate; the boys drove it back again. Gradually one black bull was isolated, driven towards the sanctuary and disappeared inside.

The boys stripped to their loincloths for the final stage of their initiation. Hundreds

of them surged forward, a sea of shiny young bodies. Suddenly the black bull shot out of the sanctuary, maddened by some action concealed from us. The boys were on him like a swarm of bees. The bull was thrown. We heard the sickening thudding of hundreds of fists as he was beaten into unconsciousness. Then the bull was dragged back into the sanctuary where the priests tore the organs from his still-living body, to use in the anointing of the King.

Late in the afternoon when the sun just tipped the western mountains there was once more this ceremony of throwing the bull. Cattle were driven in. This time the bull broke free and galloped towards the gate with all the boys streaming after him. They

After the day's celebrations are done comes the homelier task of cooking the evening meal. Many of the Swazis have journeyed far to attend the Incwala. To some, it means an interlude of strong contrast to city life; to all, a sign of national solidarity and a link between present and past



caught him by the tail and threw him on his left side. Then, shielded from the spectators by lithe brown bodies, Sobhuza sat on the panting black flank as the bull lay prostrate. Sobhuza's body was washed ceremoniously with a foamy lather made from the waters of rivers and sea into which had been poured the bile from the sacrificial bull. Unlike that beast, the sacred bull is never killed but plays the part of a throne for the Swazi King year after year. When this bull dies it must be treated with great respect and its flesh may not be eaten.

The fourth day is named the Great Day. At its climax there takes place in private the throwing of the gourd, which is intimately connected with the blessing of the first fruits. The King partakes of the first fruits, drinks the beer made from the new crop and eats pieces of meat taken from the sacrificial bull. The afternoon is Visitors' Day. The Resident Commissioner and his officials attend in white uniforms and swords, members of the Diplomatic Corps come from Pretoria and there are scores of Swazi and European spectators. Only on that day may photographs be taken. The dancers appear in full ceremonial costume, stamping, chanting and every so often giving the shrill Royal Salute. The Queen Mother danced in a magnificent leopard-skin. The queens (of whom there are sixty) had goat-skin aprons pulled up to their armpits, and black pleated skin skirts below. Each queen had a small apparently disinterested boy as a guard to keep off inquiring males. But the Queen Mother's guard was a warrior in full costume.

The royal daughters appeared for the first time on this day. Their mobile young figures were scantily clothed with only a brightly beaded belt and a swinging scarlet sash hanging to the right knee, a giraffe-hair necklace and red royal feathers in their hair. "Why are some so much lighter-skinned than others?" we asked our neighbour. "The darker ones have been in the sun all year," he told us, "but those light-skinned ones have been at the mission school wearing European clothes. That one has just taken her matriculation," he added, pointing to a particularly pretty girl. The royal daughters' dance was as delightful as their brown young bodies. They swaggered and swung their hips, glided forward and back, holding long thin reeds in their right hands. It is said the King has them taught to jive. Certainly their sinuous movements were very different from the stately reverence of the dance of the older women.

The dancing went on throughout the afternoon. Finally the King returned to the sanctuary; the priests followed him. The dancing became quicker, the chants louder, the regiments moved in closer and closer to the sanctuary, a close-packed mob of coloured feathers and jerking cowtails. Suddenly the King leapt out, clothed in green leaves and grass. A cap of black feathers surmounted the lion-skin tied at his forehead and falling over his shoulders, about his loins was the skin of a silver monkey, the sacred animal of kingship which the Swazis say is never known to die.

The remaining spectators were asked to leave. The last stages of the Incwala are for the King and his people alone. The King executes an original dance and throws a gourd to his warriors; they must not allow it to touch the ground. Then, as on the evening before, the warriors go to the river for ritual washing while the King remains in the sanctuary.

The following day, a Sunday, was one of silence and seclusion. "No-one is supposed to work," my Swazi boy told me. "No-one may even scratch his head"—something necessitating great restraint.

Lastly came the burning of the bones. A great fire was lighted in the cattle-byre; the remains of the sacrificial bull and the ritual objects were placed on it. There was a strange acrid smell when we entered the byre; heavy grey smoke lifted slowly above the huge square pile of logs. The Incwala is a rain-making ceremony as well as a religious one; the rain should have come that day to put out the fire. But there had been a soaking downpour the day before and no-one seemed worried that it had come early. Everyone, in fact, was happy and relaxed. The warriors and the women were dancing in the spirit of a job successfully completed. And round and round outside the cattle-byre went the King's daughters in their brilliant scanty costumes, swaying their hips and tooting shrilly on penny whistles!

The Incwala means many things to the Swazi people. It is a religious festival in which they believe their ancestors join the living to ensure the well-being of the coming year. It is a great national festival, which provides perhaps the strongest bond of solidarity among the Swazi people as they, like other Africans, experience economic developments and increasing political self-consciousness and influence. To us it brilliantly blended the fulfilment of the harvest festival with the joy of the New Year.

The Wandering Megaliths of France

by GLYN DANIEL

By his books and broadcasts, Dr Daniel has made familiar to a wide public the four types of megalithic monument found in north-western Europe: the chambered tomb (in France called a dolmen, in Wales a cromlech), the stone row (or alignment), the stone circle, and the single standing stone or menhir. He has just completed a book on The Prehistoric Chamber Tombs of France and here discusses the curious adventures undergone by some of these tombs. In a second article, to be published next month, he describes the art of the French megaliths, especially the statue-menhirs

FRANCE was described by a 19th-century British archaeologist as "the country of dolmens as far as Europe is concerned" and indeed the word dolmen itself seems to have originated in France. It appears to come from two Breton words meaning "table" and "stone" and was created by antiquaries at the end of the 18th century, since when it has become the general folk-term for a megalithic tomb in France, just as cromlech is in Wales. Certainly France is extremely rich in megalithic monuments and even the most ordinary traveller with no special interest in prehistoric architecture cannot fail to observe and be impressed by the stone rows and stone tombs of the Carnac-Lozmariaquer region of southern Brittany, the enormous *allées couvertes* or gallery graves of the lower Loire and Poitou, like those at Saumur and Bournand, the chalk-cut tombs of Courjeonnet and Coizard in the Marne and the huge rock-cut chambers in the Arles-Fontvieille region of southern France.

The number of these monuments is in itself impressive; there are well over six thousand dolmens surviving in France at the present day, and the famous alignments of Carnac extend for a distance of several miles and comprise in all many thousands of stones—some as much as twelve feet in height. And the size of some of the prehistoric French megalithic monuments is equally impressive. The Grand Menhir Brisé at Lozmariaquer now lies broken into four pieces; originally it stood 67 feet 6 inches high: it is the most enormous menhir or single standing stone in the world. Cleopatra's Needle on the Thames Embankment is a foot taller but only weighs 180 tons; the great menhir of Lozmariaquer is 13 feet 6 inches in width and 7 feet 6 inches thick and its weight is computed as about 330 tons. The estimation of the weight of some of the

stones used in walling or roofing the great French megalithic tombs is not an easy matter, but the most conservative estimates suggest that some of the huge stones used weigh between 40 and 200 tons. The amount of labour and skill involved in the quarrying, transport and construction of these stones is something which needs no elaboration. They are often covered over with large mounds of earth and stone; some of the mounds are as much as 200 feet long and 20 feet high and would have taken a labour-force of a hundred to a hundred and fifty men two or three years to build. We have some idea of the problems involved in the construction of these stone monuments when we read accounts of their destruction. Between 1830 and 1840 the main capstone of a great megalithic chamber near Saumur in Central France was moved to be used as a bridge across a river. Eighteen pairs of oxen were required to drag the capstone, and enormous rollers, each made of the trunks of four oak trees lashed together, each roller having a diameter of over three feet.

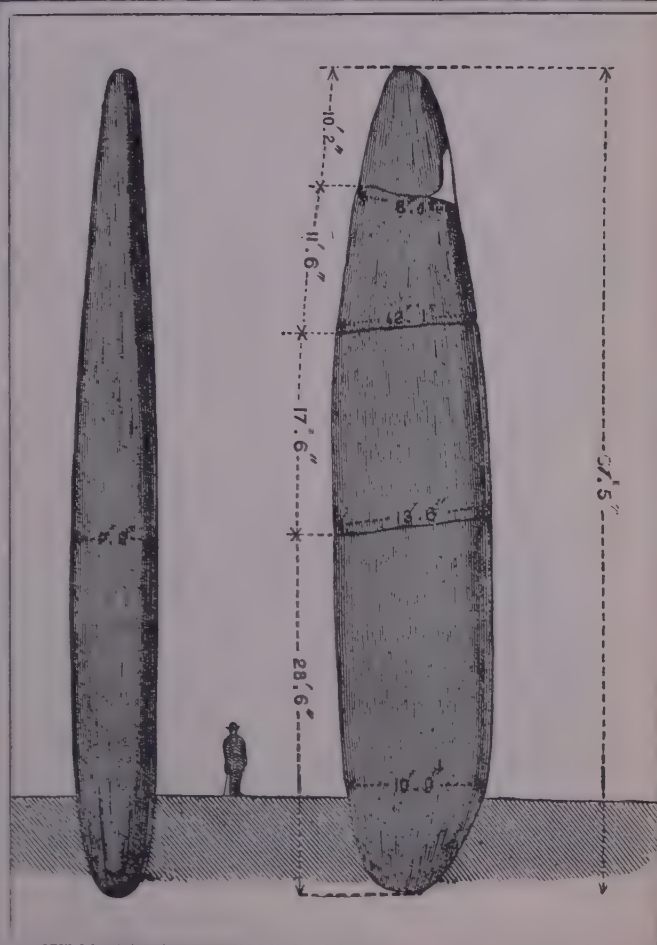
The purpose of these monuments is not difficult to guess at. The standing stones—the menhirs—were presumably commemorative or cenotaphic monuments. The alignments—the great stone rows—were, we suppose, some sort of ritual and therefore religious monument, like the great stone circles which we have in England. Stonehenge and Avebury and Stanton Drew are, one must suppose, the temples or cathedrals of one period of prehistoric Britain, and surely the Carnac alignments are the same sort of monument. We can envisage processions of people moving up the great stone rows towards semicircular and half-rectangular enclosures at their ends, but to what precise purpose we cannot say. Archaeology, at its best when dealing with prehistoric times, can hint at custom but can only guess





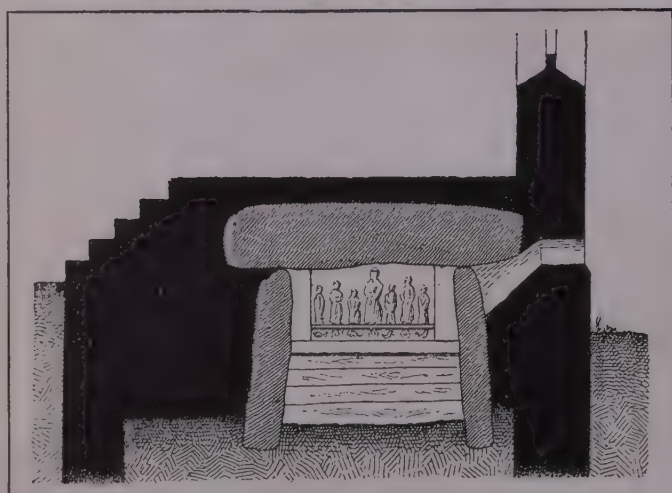
From the author

Of the many megalithic monuments in France, the best known are those at Carnac where (opposite, top) the stone alignments stretch for miles in eleven parallel rows near the south coast of Brittany. It can be assumed that they were a sort of ritual or religious monument but the beliefs of the men who set them up 3000 years ago can only be guessed at. (Opposite, bottom) Several megalithic tombs have been brought from other parts of Brittany and reassembled around the archaeological museum at Penmarch, near Quimper in Finistère. (Above) The most remarkable example of a single standing stone is the Grand Menhir Brisé at Locmariaquer, further east on Quiberon Bay. This, now fallen and broken into four parts, is the largest single standing stone in the world. Weighing some 330 tons it is 67 feet 6 inches high and 13 feet 6 inches wide. (Right) A reconstruction of the Grand Menhir by Sir Henry Dryden, the 19th-century archaeologist who made accurate surveys of many of the prehistoric monuments in Western Europe





Artaud Père et Fils



From the author

The megaliths of France have journeyed in various ways and have been put to strange new uses. Perhaps the most understandable is their adaptation to Christian practice. (Above) The Dolmen de la Belle-Vue at Carnac is surmounted by a Christian cross. (Left) The tomb which now forms part of the crypt of the little church at Les Sept Saints near Lannion in north Brittany. (Opposite) An archaeological puzzle is the chapel of St Germain not far from Confolens in the Charente: the capstone of a megalithic dolmen supported on mediæval pillars with a stone altar below

at belief. The customs of usage of the dolmens are beyond dispute: these megalithic chambers were tombs and tombs used collectively over a considerable period of time. The burial rite mainly used by their builders is inhumation and in a few tombs like St Eugène near Carcassonne there are as many as three hundred people buried. Nor is there any longer any great dispute about the date of the French dolmens; some of them were being used at a time when segmented faience beads were being traded to north-western Europe from Egypt and the eastern Mediterranean, a period which seems to have been roughly 1400 to 1200 B.C. Others were clearly in a later state of their use or had gone out of use by the time of this trade in faience beads. All exact chronology in barbarian prehistoric Europe is subject to revision, but the present view is that the earliest French

megalithic tombs were being built and used before 2000 B.C. and that the great *floruit* of megalithic construction in France was somewhere between 1900 and 1400 (or 1800 and 1500) B.C.

But the construction and use of these tombs went on long after this. In the *causses* country of the south of the Massif Central, small megalithic tombs were being used right through to 1000 B.C. and were being re-used in the 8th and 7th centuries B.C. But this really brings the prehistoric use of the megalithic tombs to an end and they were not used again until Gallo-Roman times when, without doubt, they were visited—perhaps by picnic parties or local archaeological societies—and were sometimes used as shrines.

The Roman Catholic Church at first frowned on any tendency to worship at the rude stone monuments which might be a

Caisse Nationale des Monuments Historiques, Paris



survival of what Irish archaeologists have with great perception called "the elder faiths"; but later on this prohibition was relaxed and we find the old pagan stone monuments being accepted into Christian practice. There is a menhir at the west end of Le Mans Cathedral and several menhirs and dolmens in Brittany have crosses carved on them or set up on top of them. The most curious monument is in northern Brittany in the parish of Vieux-Marché not far from Lannion. Here there exists a hamlet called *Les Sept Saints* and the church, built between 1702 and 1714 (probably on the site of a more ancient chapel), actually incorporates a megalithic tomb. This dolmen now forms the crypt of the church, and one can enter it from outside and take part in the celebration of mass in the megalithic tomb; the altar with the figures of the seven saints is directly underneath the end of the great megalithic capstone. An even more surprising ancient monument, witness to the same fusion of pagan and Christian faiths, is found in the centre of France, near Confolens in the Charente. Here, on an island, there is to be seen at the present day a very strange ruin: four columns of 11th- or 12th-century date supporting the very megalithic capstone of a dolmen, and underneath it a

stone altar. What happened is that a megalithic tomb was dismantled and turned into a Christian church in mediaeval times; and has now, in the fullness of time, itself become ruined, providing at first sight an insoluble archaeological problem: namely, pillars of the 12th century A.D. supporting a megalithic capstone of the early second millenium B.C!

What is even more puzzling to the modern archaeologist than the re-use of megalithic monuments is their habit in France of sometimes wandering away from their original position and purpose. When Dr Henri-Martin, the excavator of La Quina, died, a menhir was bought to be put over his grave in Père Lachaise in Paris; and when his son died and left his estate to the Musée des Antiquités Nationales at St Germain, the menhir was removed from its temporary resting-place in a Christian cemetery and put up at St Germain. In addition to this menhir there are two megalithic tombs in the fosse of the château at St Germain to surprise the uninformed visitor who looks over the drawbridge. One comes from Conflans St Honorine, a village some five miles north of the Museum, and the other from Epone or Aubergenville, fifteen miles west of St Germain. Other museums in France have collected wandering dolmens in this way:

there is one outside the museum at La Rochelle and another in the courtyard at Troyes and the very interesting archaeological museum at Penmarch in Finistère, now owned and administered by the University of Rennes, has several megalithic monuments grouped around it. All these wanderings have of course taken place for reasons of safety; the monuments were being destroyed and needed security. But some of the wanderings which French dolmens have made are for less reputable reasons.

If you happened to be in Central France and thought of visiting the remarkable dolmen at Confolens which I have already described, with its underpropping of mediaeval pillars, do not fail to visit the local cemetery. Here is one of the most curious of wandering megaliths. In the 19th century a family thought it would be



A. J. Thornton



The author

(Above) *Two megalithic tombs from the neighbouring countryside have reached their resting-place in the fosse of the Château of St Germain. Also in the fosse is a menhir which earlier marked the grave in the Père Lachaise Cemetery in Paris of Dr Henri-Martin, a 19th-century archaeologist*

nice to buy a dolmen in which to bury their deceased father; and, having done so and erected it in the churchyard of Confolens, were uncertain as to what sepulchral use they could properly make of the large and intractable stones that had been dragged many miles through the Limousin countryside. So they compromised by erecting a remarkable carved monument on top of the capstone of the dolmen and thus created, within a few miles of the other dolmen at Confolens, one of the great curiosities of megalithic architecture in France, or for that matter in Western Europe.

Others had a more clear idea of how to use or re-use megalithic tombs. In the Cimetière des Essarts at Meudon in the suburbs of Paris is a dolmen that has wandered very far. You will find it on the right of the south entry to this modern cemetery and indeed it forms at the present day the tomb of the Piketti family. It is properly the

Dolmen of Ker-Han in Brittany and originally stood 250 metres south-west of St Philibert near Carnac. It was excavated in 1886 by Félix Gaillard and he found a pot, a polished stone axe, two callais beads and some flint flakes. In 1896 it was uprooted and sent off to Paris: Zacharie le Rouzic, the curator of the museum at Carnac and author of many works on Breton megaliths, supervised the work of transference and during it found a white quartz pendant, a polished stone axe, a callais bead and some flint flakes. The monument as it now stands in the Meudon cemetery consists of six supports and two capstones. One of these is modern and bears the legend that it is the vault of the Famille Piketti, started in memory of "Jean Baptiste Piketti, Archéologue", who died in 1894. Between then and 1932 no less than nineteen members of the Piketti family were buried in this monument. It is perhaps not



From the author

A further example of the extraordinary uses to which megaliths have been put is in the modern cemetery at Confolens. In this case a dolmen was bought and erected with a stone sarcophagus over it to use as a 19th-century tomb

the right phrase to use: in the second millennium B.C. people were buried 'in' the Dolmen of Ker-Han; in the 20th century when, most surprisingly, this tomb has been re-used as a tomb, the bodies were buried not in but under the tomb, below the level of the ground.

The Dolmen of Ker-Han travelled three hundred miles to get from Brittany to Paris. Not far away from its present site is a dolmen that did not travel so far but had a series of very curious adventures. In 1814 a Hungarian Colonel of Hussars, arriving with his troops to invest the Château of Meudon, fell from his horse and struck his head on a stone sticking up in the middle of the avenue leading to the château—a stone which had appar-

ently been well known to the local inhabitants for many years as La Pierre de Rabelais. Just over thirty years later, on July 26, 1845, the *Journal de Seine-et-Oise* related the finding of a megalithic monument by workmen repairing the road-surface of the Grande Allée leading from Bellevue to the Château of Meudon. One big stone was blown to bits by a mine, another broken up by hammer-blows; but some scientific information was obtained and in a paper read that September to the Académie des Sciences it was reported that the human remains found probably belonged to no less than two hundred individuals. This monument lay across the width of the Grande Allée. Its subsequent wanderings form a fitting climax to a story that began with the fall of a Hungarian colonel. The stones forming the monument were moved away in 1861 and—there were now only five or six stones left—made into a sort of pyramid at the north angle of the terrace of the château. In 1870 the Germans saw fit to upset this pyramid, but after the Franco-Prussian war a Monsieur Janssen constructed from the surviving stones the slightly bizarre monument which can now be seen on the Meudon terrace. It has had a more chequered history than most megalithic tombs,

though it has not actually wandered so far.

Confolens and Meudon each contain, with their wandering dolmens, some of the very odd jokes in French prehistoric archaeology. But the oddest joke of all concerns a monument that has wandered right out of France. This is the monument found on the hill called the Mont de la Ville on the east side of St Helier harbour in Jersey in the late 18th century; and we must regard Jersey and the other Channel Islands as part of France in prehistoric times. The monument was found in 1785 when the surface of the hill was being levelled to make a parade-ground. In their enthusiasm the States of Jersey unanimously voted the monument to Field-Marshal



Caisse Nationale des Monuments Historiques, Paris

Another dolmen was used as a memorial to an archaeologically-minded member of the Piketti family in 1894. (Above) Brought at considerable cost from Brittany it was erected (below) in the Cimetière des Essarts at Meudon in the suburbs of Paris and continued in use as a family vault for the next thirty years

The author





G. Buckell and Son

(Above) Few megaliths can have wandered as surprisingly as the one presented by the grateful council of Jersey to Field-Marshal Conway, their popular Governor, for he transported it to England and set it up in the grounds of his country house in Berkshire. Now, unfortunately, it is suffering from the neglect inevitable when an estate is broken up and sold. (Right) The plaque which records the circumstances of this odd gift

UN ANCIEN TEMPLE DES PRÊTRES
RECOURUT LE 12ME AOÛT 1785,
PAR LA MONTAGNE DE ST JELIER
DANS L'ISLE DE JERSEY,
A ÉTÉ PRÉSENTÉ PAR LES HABITANS
EXCELLENCE LE GENERAL CONWAY,
LE GOUVERNEUR
POUR ÊTRE SÉCRÉTÉ AUX REGARDS DES MORTELS
CET AN ÉTANT UN INT. CES PIERRES, CES AUTELS
OÙ LE SANG DES HUMAINS OFFERT EN SACRIFICE,
RUISSELA, POUR DES DIEUX, QU'ENFANTIOIT LE CAPRICE
CE MONUMENT, SANS PRIX PAR SON ANTIQUITÉ,
TEMOIGNERA POUR NOUS À LA POSTÉRIITÉ,
QUE DANS TOUS LES DANGERS CESARÉE EUT UN PÈRE
ATTENTIF, ET VAILLANT, GÉNÉREUX, ET PROSPÈRE
ET REDIRA, CONWAY, AUX SIÈCLES À VENIR,
QU'EN VERTU DU RESPECT DÙ À CE SOUVENIR,
ELLE TE FIT CE DON, AQUIS À TA VAILLANCE,
COMME UN JUSTE TRIBUT DE SA RECONNOISSANCE

Conway, the retiring Governor. The Field-Marshal, not unnaturally, was loth to accept so large and awkward a gift, particularly when he learnt he was supposed to move it away at his own expense. Indeed, he had to be persuaded by his friends. Horace Walpole wrote to him: "Pray do not disappoint me, but transport the Cathedral of your island to your domain on our continent." This in the end Field-Marshal Conway did; the stones of the great megalithic monument passed up the Thames in a barge in March 1788, and were re-erected with the aid of a model pre-

pared in Jersey in the grounds of his house, Park Place (near Henley) in Berkshire. The reconstruction however does not seem to have been "erected exactly . . . according to its original form and conformably to its real dimensions", as contemporary accounts claimed. The original monument seems to have been much larger; the reconstructed remains in Henley have a diameter of only 27 feet. But it is still, this much-travelled monument, full of interest, and links us in England to the strange wanderings of some of the French dolmens.

Wild Australia

by JOHN WARHAM

John Warham, a Yorkshireman, and his wife have been wandering around Australia for the past five years studying and photographing the remarkable creatures there—creatures whose diversity and strangeness make them a fascinating subject, as his article and the accompanying photographs show. This account of the animals of Australia is to be followed at a later date by one on South America

WERE some strange misfortune to destroy Britain's birds and mammals completely it would still be possible to find examples of them all elsewhere in Europe. Such a disaster to Australia's animals, however, would result in the extinction of hundreds of species to be found nowhere else, for Australia has the most distinctive fauna of any continent. The region is also numerically rich in the varieties of animals it supports. Thus, while birds in Britain are at least as thick on the ground as they are in Australia, the latter possesses about 660 species as opposed to about 435 recorded for the British Isles. Elsewhere the differences are more marked: there are over 50 kinds of non-marsupial rats and mice in Australia and about the same number of bats (Britain 8 rats and mice, 13 bats) and her reptiles and amphibians run into some hundreds compared with Britain's paltry fourteen.

Australia has many ordinary kinds of mammals whose existence is often overlooked in view of the great interest of those peculiar to her, the monotremes (mammals which lay eggs) and marsupials (mammals which shelter their young in pouches). The continent's isolation has allowed these primitive animals to develop undisturbed until very recent times by the more advanced placental mammals which have almost ousted marsupials elsewhere in the world.

There is no evidence that the monotremes, the only egg-laying mammals, ever occurred outside Australia. This class is represented by two main types, the Platypus (*Ornithorhynchus*) and the Echidnas (*Tachyglossus*), animals which, at first sight, appear quite unrelated. Nevertheless both lay eggs—the Platypus actually incubates hers in an underground nest—and both are true mammals, for the females suckle their young and all have hairy coats. Egg-laying reflects their reptilian ancestry and these animals are often, and justly, referred to as "living fossils", although it should be noted that each is highly specialized for its particular mode of life, the Platypus for a burrowing and underwater existence, the

Echidna for digging out and locating the ants and termites on which it feeds.

The Echidna's leathery-shelled egg is laid directly into a belly-pouch where it hatches and in which the tiny young one is cradled during its early days. It laps up milk oozing from pores opening into the pouch, which connect with the mammary glands. When the youngster's spines become too sharp for the mother's comfort, she tips it out and hides it in some rocky recess while she forages in the dark.

The Echidna looks very like a large, tubular-nosed edition of the familiar hedgehog and it too rolls into a ball when alarmed. Yet these animals are really poles apart, superficial resemblances being due to their separate ancestors having independently succeeded in transforming hairs into spines and so acquired a protective covering. The resemblances are due not to affinity but to convergent evolution. Another remarkable example of the same process is given by the European and marsupial moles (*Talpa* and *Notocyles*). Both are forms adapted for burrowing, of similar appearance. Eyes, ears and tails are degenerate, the short limbs are equipped with broadened nails to facilitate digging, each appears to live at a high metabolic rate and has a voracious appetite. But *Notocyles* is a true marsupial and the structural similarities are simply adaptations acquired independently to fit them both for a similar mode of life.

The main differences between marsupial and placental animals (of which rodents, cattle, whales and men are typical examples) is in their mode of reproduction. In placentals the embryo receives nutriment for growth through a pre-natal link with its parent's blood-stream—the placenta. In monotremes and marsupials such a link is either missing or inadequate, the embryo's food comes solely from the yolk-material just as it does in birds and reptiles, and when this is all used up the marsupial baby is born. Placentals benefit from long gestation-periods so that young are well developed at birth,

whereas the marsupial's offspring is often no bigger than a bean and has to be sheltered for many months within a special fold of skin or pouch inside which lie the mother's teats. Within this fleshy cradle the naked baby is protected from variations in the temperature of the outside world.

Marsupials are not quite restricted to Australia: two families, the true opossums (didelphids) and some peculiar, rat-like creatures, the caenolestids, occur in America. The first Australian marsupials are thought to have been small animals similar to *Antechinus*, the present-day marsupial mouse, which is also nearest to the true American opossums. From such small beginnings a wealth of larger and smaller forms, some highly specialized, eventually evolved.

Fossil marsupials have been unearthed in Europe and in North and South America as well as in Australia. Such discoveries have

naturally led to deductions about the ancestry of the present-day forms whose forefathers seem to have come from outside Australia. Several places of origin have been proposed none of which, on present evidence, is wholly convincing, but it seems likely that these animals appeared first in America. How they reached Australia is still more debatable. One theory supposes them to have come from Patagonia across the hypothetical land-link "Gondwandaland" between South America, Antarctica, and Australia, a theory supported by similarities between fossil South American forms and some of Australia's living marsupials, but weakened by the very deep waters now separating the three continents. Another and more probable theory suggests that in the Oligocene era marsupials of the opossum type spread from the Alaska-Alberta region into Asia via Kamchatka and thence moved southwards to reach Australia

The Australian Platypus is the strangest of the monotremes. It has a bill like a duck's, a tail like a beaver's, its body is covered with woolly fur and it lays eggs though it suckles its young. It is aquatic, living on the banks of streams and feeding on small creatures it finds in the mud

By courtesy of the Australian News and Information Bureau





By courtesy of the Australian News and Information Bureau

The Wombat is an engaging creature with long coarse fur and large chisel-like incisors, in size and appearance like a small bear. It is found in southern and eastern Australia and Tasmania. It lives on the ground or in burrows or holes among the rocks and it feeds on grass and roots

towards the end of the Cretaceous period over land-bridges then joining that continent to New Guinea. The weak link here is the absence of fossil marsupials from the Asiatic region.

Whatever their route, it is certain that marsupials have roamed Australia for millions of years, time enough to produce many species and to exploit almost all the environments most suitable for them: the "ecological niches". In contrast, South American marsupials have retreated in the face of increased competition from animals higher in the evolutionary scale and seem to be doing so still.

The earliest known Australian fossil marsupial, the possum-like *Wynyardia*, is some 60,000,000 years old. Carbon dating has shown that several kinds of marsupial were in existence soon afterwards but the peak seems not to have been reached until the

mid-Pleistocene, about 400,000 years ago, when conditions in Australia were much warmer and wetter than they are now, with lush vegetation in the central areas. Diprotodons were widespread—creatures resembling the modern Wombat, which is about three feet long, but as big as small elephants and the largest marsupials ever—and there were also giant echidnas and kangaroos. Some of these large forms lived until quite recently and were probably present when aboriginal man arrived, perhaps 15,000 years ago.

The giant marsupials' downfall seems to have come, not through pressure from brainier competitors, but through climatic changes. Following the recession of the ice-fields after the last glacial period, the climate about 9000 years ago became increasingly hot and dry and except within narrow coastal belts arid conditions obtained for 5000 years. This wiped out the giant fauna and

compressed much that remained into narrow 'humidity refuges' around the coasts. The skeletons of Diprotodons embedded in Lake Callabonna reveal how great numbers of these animals were driven there by drought to be bogged in the mud and perish.

Despite such losses, Australia's marsupial fauna is still very rich. The kangaroo tribe, which includes over sixty species, affords a good example. Here are animals no bigger than a hare; others stand seven feet high. Some are grazers, others browsers, and there are forms adapted to wet and dry country. The Tree-kangaroos have lost the huge hind limbs of their fellows and have developed strong nails on the hands for grasping; in the Rat-kangaroos long nails help in digging for roots; while Rock-wallabies' feet are ribbed to reduce slipping on the polished boulders among which they live.

Tree-living marsupials include the phalangiers or possums and the famous Koala. The Glider-possums have kite-like flaps between their limbs which allow them to glide from tree to tree. Several marsupials are flesh-eaters and have been given names like Native Cat, Tasmanian Devil and so on, because of

their tenacity and resemblance to more conventional carnivores.

Geographical isolation is the essential requirement for the development of new species, and birds or other flying animals are not insured against this by the possession of wings. There are many barriers to bird-movement besides physical ones like the oceans and mountain ranges. Climate, vegetation, soil and a variety of biological factors may prevent the intermingling of different groups, lead to genetic changes and the evolution of new species. Many new kinds of birds have in fact appeared in Australia, probably often in the last 10,000 years from progenitors that reached the continent from the north by way of New Guinea and Timor.

The chief physical barriers preventing the intermingling today and in the recent past are, in the east, the Great Dividing Range, in the south the forbidding expanse of the Nullarbor Plain which many birds not adapted to dry-country conditions cannot cross, and the encroachment of the central desert onto the coast in the north-west near the Eighty-mile Beach. The explorer Baldwin





All photographs by John Warnam

Australia has the most distinctive fauna of any continent. It is also extremely varied. Isolation has encouraged both survival and the evolution of new species over thousands of years. For example, marsupials—elsewhere extinct apart from two types in America—are numerous in Australia even now, some being highly specialized. The most attractive is the famous Koala (above), which has become adapted to an arboreal existence. Its long nails give it a powerful grasp of the branches among which it lives and it thrives on a bulky diet of eucalypt leaves, eating about two-and-a-half pounds a day



Another kind of marsupial is the kangaroo: examples of one sort or another are found in many different settings in their native Australia. The Rock-wallaby (above) is a medium-sized kangaroo that haunts stony outcrops and hills all over the continent, showing great agility in leaping from boulder to boulder. The long tail is used as a balancer and the soles of the feet are ribbed to reduce slipping. Like most marsupials this wallaby feeds at night, descending to graze on the herbage. During the heat of the day it shelters in cool recesses deep among the rocks of its secluded habitat.

Besides her marsupials, which shelter their young in pouches, Australia has some still stranger survivals of primitive mammals: the monotremes, which lay eggs. Even these "living fossils" are extremely self-reliant. The Echidna or Spiny Ant-eater (below) depends on its sense of smell to find the ants whose nests it unearths during its nocturnal prowls. The nails on its shovel-shaped feet are used when digging for food or for scratching its skin. If attacked in sandy situations, the animal burrows downwards, its spiny coat discouraging interference, and eventually disappears from sight





Australia's birds are as distinctive and varied as her other wild animals. Her regional contrasts have led to the development of many new species, some of which are restricted to Australia only, such as the Splendid Blue Wren (above). These "fairy wrens" are a group of insect-eating warblers remarkable for their long tails and the brilliant, scintillating colours of the males, in whose plumage-patterns blues, blacks and reds predominate. The birds forage in small bands and cluster together at night when sleeping, thus gaining protection against the cold nights common in Australia's inland. At nesting-time, supernumerary birds of either sex may help with the task of rearing the young

In Australia, with its numerous geographical barriers to bird-movement, certain kinds of birds are confined to a particular region. Others, including the Brown Honeyeater (below), are found in many or all parts. This small bird is one of the most widespread of the biggest bird group in Australia: the Meliphagidae or honeyeaters, of which there are sixty-four species. They are important pollinators of the flowers of the bush and forest, from which they sip nectar with the aid of their specially designed brush-tipped tongues



The Great Bower-bird (below) exemplifies the high degree of specialization that many Australian wild animals have reached. Restricted to Australia and adjacent New Guinea, the bower-birds have evolved the unusual habit of building 'avenues' or 'maypoles' of twigs and vegetation, near which they display to the attracted females. The bird illustrated, a male, carries a patch of lilac feathers in the nape; normally these feathers are hidden, but at the height of the display, which includes a peculiar jerking of the head and a special 'ticking' note, the colour-patch opening like an exotic flower is seen, framed in the arch of the bower, by the females silently watching





Australia's many kinds of reptiles and amphibians are most numerous in the north. The Mountain Devil (above) is a small reptile which despite its horrific appearance is a harmless though extremely bizarre member of a large group of dragon-lizards. It is peculiar in having the whole of its back and sides covered in spines; these act as protective armour and provide a disruptive shadow. This close-up shows the prickly warts as well as the large spines over the eyes and the still larger ones on the shoulders

Another lizard is the Rusty Dragon, which like the Rock-wallaby is an inhabitant of the stony outcrops and hills of inland Australia. It feeds on insects and can run in an upright posture on its relatively huge hind legs which also enable it to leap into the air and snatch passing flies. Like many dragon-lizards, each individual occupies a territory on its rocky domain from which it repels trespassers. Within this territory it has favourite retreats where it runs for shelter if attacked and where it sleeps at night





The Quokka is a small wallaby. It is restricted to Western Australia and has the distinction of being the most studied of all Australian marsupials. It eats grasses and low-growing herbage, moves with a hopping gait and, as here shown, creates runways through the rank vegetation of its favoured haunts. Now very rare on the mainland, it survives in numbers only on a few islands of which Rottnest, where this flashlight shot was taken, is the best known. These animals account for the name of the island since the Dutchman Volkersen who noted their abundance in 1768 described it as a veritable "rat's nest"

Spencer described the main zoo-geographical regions based on these barriers many years ago. They consist of a central "Eyrean region" whose inhabitants can tolerate arid conditions, and peripheral regions—the "Torresian" in the tropics and the "Bassian" in the subtropics—whose vegetation is or was mostly humid forest. In the far south-west corner a mixture of Eyrean and Bassian forms occurs. Of course, some birds, like the Brown Honey-eater, can live in several or all of these zones, but the reality of the regional concepts is apparent to the discerning traveller. Driving northwards recently up the lonely track along the west coast the birds I saw changed little for the first 1300 miles, but no sooner had the dusty stretch alongside the Eight-mile Beach been crossed than many new ones were encountered: Friar Birds, Rollers, Cranes, new kinds of Flycatchers, Parrots and Fairy Wrens were soon common, Torresian birds which either never attempt to fly south or, if they do so, perish in the process.

Some important bird-groups are solely Australian. These include the highly evolved Bower-birds, the males of which build "avenues" of twigs in which to display before the females, the flightless Emus and Cassowaries which depend on their legs to carry them from danger (they can do 35 m.p.h.), and that strange family, the Megapodiidae, whose members have retained the reptilian habit of laying their eggs in piles of decaying vegetation or warm volcanic soils which make natural incubators.

Parrots are believed to be among the oldest of the endemic bird-groups and their variety of forms and habitats may be ascribed to the long periods of time over which they have evolved and perhaps to the fact that, moving in flocks, they are better able to establish themselves in new environments than are solitary individuals. The parrot tribe includes small forms like the familiar budgerigar and others such as the Palm



The Emu, a long-necked flightless bird, differs from the other flightless Australian ratite bird, the Cassowary, in colour and feather-structure (the Emu's feathers are string-like). It is found all over Australia, but mainly in the Eyrean region

The Zoological Society of London

Cockatoo which is as big as a buzzard. Many eat seeds and have powerful beaks and muscular tongues but some have slender, brush-tipped tongues with which they mop up the nectar of the bush-flowers, while others rip bark from trees to reach the larvae hidden beneath. Most species nest in hollow trees, in cavities in cliffs or in termite-hills, but a few even nest on the ground. Parrots are plentiful in the humid coastal corridors, while some are at home in the desert.

Australia's reptiles and amphibians are most numerous in the north. On sandy beaches turtles lay their eggs, in swamps and rivers all over the Commonwealth several tortoises are quite common and there are

both sea-going and freshwater crocodiles. Among amphibians, *Praetops*, the famous water-holding frog of the interior, is remarkable for its ability to bury itself below a claypan for many months. Distended with water it escapes desiccation until the infrequent rains allow it to emerge, feed, and breed before the ground dries out again.

Reptiles and frogs form important food-sources for birds and mammals while some snakes and monitors climb trees and in turn prey on birds and phalangers. Skinks and Geckoes are plentiful, many of the former being sluggish but protected by horny scales or by spines on their backs and capable of ejecting bright blue tongues in a startling threat-display when alarmed. The Geckoes are soft-bodied creatures of nocturnal habits.

An important family is that of the Agamidae or Dragon-lizards of which the most bizarre is the Mountain Devil (*Moloch horridus*), an inhabitant of the Eyrean region where it feeds solely on ants. The whole of the upper parts of this remarkable animal are

covered with warty excrescences carrying a central spine. There is a large horn-like spike over each eye and still more massive ones protrude from bosses on the shoulders. This odd creature is sluggish, lacking the quicksilver-agility upon which lizards usually depend when escaping from danger. Instead, immobility and the spiny coat are relied upon: in the light of the harsh inland sun the lizard's outline appears quite unlike that of any living thing and its disruptive shadow adds to the illusion. Even if it were discovered, the predator would be hungry indeed that tackled such an indigestible meal!

While some animals which survived the catastrophic post-glacial arid period seem to have continued their decline to the present day, human activities now offer a more immediate threat to the survival of those creatures still remaining than do climatic changes. Man has directly reduced the numbers of some animals—birds of prey, emus, wallabies, for example—which inflict losses, real or imagined, on his flocks or crops,

but his effect is felt far more indirectly through the wholesale destruction of habitats: the environments to which they are adapted. Because of their lack of mobility the mammals have suffered most; today the bulldozer can destroy the last haunts of a species in a matter of weeks.

Clearing of forest and scrub, however, is not the only way in which habitats are erased; the introduction of stock often leads to fundamental changes in the balance of vegetation, so that some of the native animals may either starve or die out gradually through inability to reproduce.

Australia affords an infamous example of the results of introducing alien animals from the more highly evolved orders whose superior intelligence and adaptability gives them a tremendous advantage over the slow-witted marsupials. Foxes, cats that have run wild and house-mice all flourish throughout the Commonwealth, and rabbits compete with native and domesticated animals alike. The house-mouse is so widely spread that it far outnumbered the many native rodents and may be trapped abundantly thousands of miles from major

The Tammar Wallaby is still plentiful on the Houtman Abrolhos islands; on the mainland its range is much more southerly suggesting that the islands became separated from the continent when the climate was colder than it is now

John Warham



settlements. The effect of the fox's activities is mostly known through circumstantial evidence, but there is little doubt that the smaller marsupials and ground-nesting birds have suffered, and I have myself seen a fox pursuing a Rat-kangaroo. D. L. Serventy tells me that the decline of the Quokka (*Setonix*), a small herbivorous marsupial on the mainland of Western Australia in the last thirty years may be nicely correlated with the spread of the fox into that region.

The situation for wild Australians is brighter on the islands. Thus on Houtman Abrolhos the beautiful Tammar Wallaby reported by François Pelsart in 1629, which was the first marsupial to be described by a white man, is still to be seen.

The need for conservation today is acute. New ways of utilizing poor soils formerly regarded as unsuitable for agriculture are resulting in the rapid clearing of vast areas of bush, and action is required to preserve a cross-section of the remaining mammals in refuges while there is still time. Some States have recognized this need and during the last two years about 1,500,000 acres have been gazetted as flora and fauna reserves. Such reserves have been in existence for many years but hardly any are more than lines on a map, without wardens or vermin-proof fences, and even today the total area of reserves is still proportionally less than that allotted to nature reserves in Britain.

Although clearing has often been ruthless—again and again one sees farms where the only trees remaining are on rocky outcrops which could never produce wheat or wool—increased settlement has not been detrimental to every wild Australian. Such birds as crow-shrikes, which are largely grasshopper-eaters, have prospered with the increase in pasture just as rooks and skylarks must have done in England after the clearing of the forests in bygone days. Some parrots, too, have extended their range, for man has unwittingly provided food and water for them.

Successful conservation depends not only on appropriate legislation and sanctuaries but on the enlistment of public sympathy and on an understanding of the ecological needs of the creatures it is desired to protect. At present public sympathy for conservation in Australia lags behind that of many European communities, and this attitude is perhaps most marked in the country regions. The farmer, by and large, is interested in the fauna around him only if it is good to eat or affects his pocket through destroying his crops or competing with his animals. This is

an attitude which will change, in line with world trends, but not before the country's fauna suffers further losses. Take, for example, the confiding Australian Bustard which, unfortunately, is excellent eating: after a decade of total protection in Western Australia it is still indiscriminately shot in the 'outback' and grows scarcer every year. In such sparsely populated regions laws without public support are well-nigh useless.

Public opinion is being enlisted in favour of preservation in many ways. Naturalists' clubs, though thin on the ground, are doing good work and a popular feature of their efforts is the wild-life show which, staged in country and in town, publicizes the continent's native animals and emphasizes the need for conservation. Education authorities, too, have nature-teachers, while bird-study groups are found in many schools. And, if British experience is any guide, the recent advent of television in Australia will also lead to a wider appreciation of indigenous animals since these are very photogenic. Some States have a system of honorary fauna wardens whose duties are to see that the game-laws are complied with and to stimulate awareness among the public, particularly immigrants from Central Europe, of the need to preserve rather than to destroy.

Despite the size of the problem and the limited resources available to the fauna boards, some progress has been made. Thus the hair seal, once decimated by hunters, seems to have an assured future as the result of protection; and although still scarce in most of its former haunts, the Koala flourishes in reserves set aside for it.

Every animal has a number of essential needs which if not satisfied lead to its decline; and conservation can be really efficient only if these needs are known. Research to this end has been started by the Commonwealth Scientific and Industrial Research Organization, through its Wildlife Survey Sections and in conjunction with the universities. Already a considerable body of knowledge concerning the biological needs of the Quokka has been gleaned and work has begun on a study of the ecology of the commonest of the phalangers, the Brush-tailed Possum (*Trichosurus*).

The unique character of Australia's fauna lends it special interest for the rest of the world: so much the greater is her responsibility to ensure that representative groups of these fascinating Australians are preserved for posterity. Only through scientific conservation backed by an enlightened public opinion can real success be achieved.

Geography and the Documentary Film: The United States

by ARTHUR KNIGHT

With the collaboration of Dr Manvell, Director of the British Film Academy, we are publishing a series of articles surveying the growth and present status of documentary films in the British Commonwealth and the United States and paying special regard to their geographical value. Arthur Knight, formerly Assistant Curator of the Museum of Modern Art Film Library, is film critic of The Saturday Review. This article has been adapted from a section of his history of the cinema, The Liveliest Art, which is to be published shortly in this country by Macmillan, New York

DOCUMENTARY in the United States was a depression baby, born of hard times and the urge to influence public opinion toward one panacea or another. The documentary pioneers of the twenties, men like Robert Flaherty and Merian C. Cooper, had already withdrawn from the field in America. Flaherty's lyric explorations of patterns of life in the remoter corners of the world were now alien to the harsh temper of the times; the early thirties found him in England working with John Grierson's new documentary unit at the Empire Marketing Board. Cooper had skilfully combined ethnology with adventure in *Grass* (1925) and *Chang* (1927). The former, made among the Bakhtiari tribe of south-west Persia, showed vividly the problems surmounted by them in their yearly migration between summer and winter grazing-grounds; the latter was photographed in northern Siam and dramatized the struggle with the jungle and its wild-life which faced the family of Kru, a Lao tribesman. Cooper then moved to Hollywood to become a successful producer of studio films.

These men had sought to bring reality to the screen within the framework of the storytelling form. The new documentarians, however, were concerned with fact alone—the bitter fact of strikes, evictions, hunger-marches and unemployment. Their techniques—and often their ideology as well—were derived from the Russian films of the late Twenties, creating left-tinged propaganda reels out of the violence and despair of the era. Inevitably, the theatres were closed to them. Shown primarily to the already convinced, their audience was limited, their influence slight. The development of a broader audience for documentary in America resulted from the work of individuals and organizations quite apart from the scattered handful of dedicated souls who first introduced the form.

Clearly, the most important single step in this direction was the introduction of *The March of Time* early in 1935. Rightly called "a new kind of screen journalism", it stood mid-way between the ordinary newsreel and the probing social analysis of the British documentary school. It dramatized the news, getting behind the headlines to offer pertinent background information and editorial opinion. Not surprisingly, both its slant and its style bore a striking resemblance to that of its successful parent, *Time Magazine*. The voice of *Time*, Westbrook Van Voorhes, was the voice of authority—strident, implacable, decisive. There was no questioning his figures, his facts, his conclusions. Everything had been carefully researched, properly thought out and knowingly packaged. Personalities, authorities on the topic under discussion, spoke their views glibly into the camera in interviews especially arranged for the reel. Dramatic re-enactments became an increasingly important part of the technique. So successful was *The March of Time* during the late thirties that RKO-Radio Pictures was inspired to launch a rival reel, *This Is America*. For most Americans, these spelt documentary. They knew nothing else.

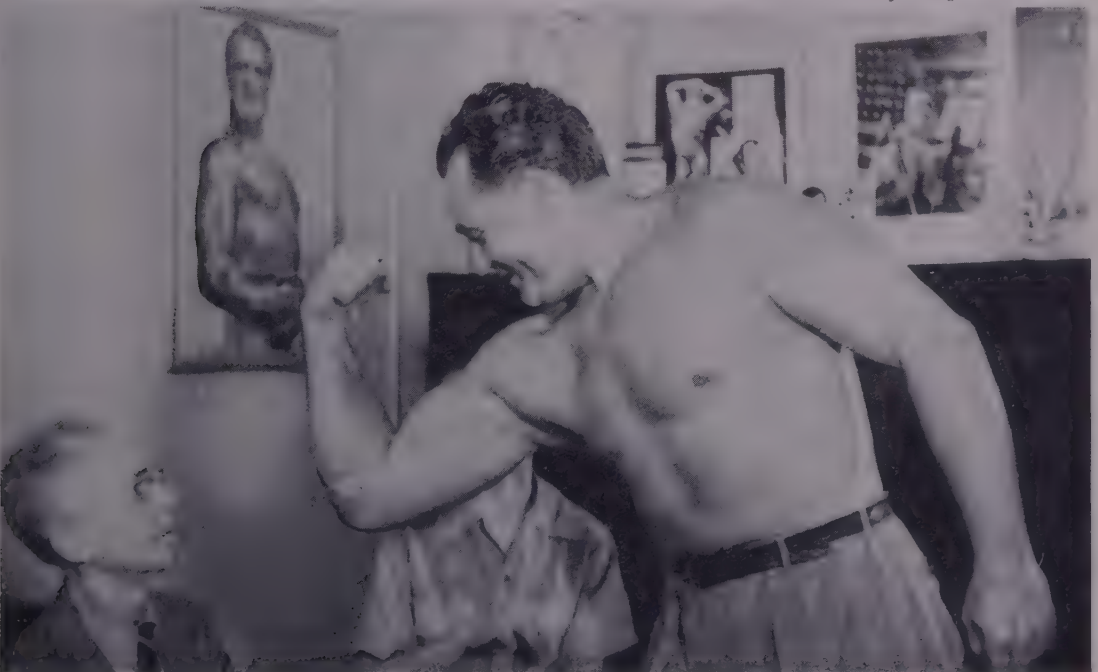
In the meantime, however, American film-makers were beginning to see examples of European documentary styles that suggested the variety of ways in which fact could be handled creatively on the screen. Robert Flaherty's British-made *Man of Aran* (1934), a feature-length study of the primitive pattern of existence on a barren Irish island, emphasized the concept of a personal, dramatic shaping of reality. Continental documentary was represented by Joris Ivens, the distinguished Dutch director who in 1936 brought a group of his pictures to the United States and remained to form an important independent documentary group, Contem-



National Film Archive

*After Robert Flaherty had proved the popularity of films dealing with the life of distant peoples, Merian C. Cooper made *Grass in Persia* and (above) *Chang* (1927) in Siam. Later the handling of domestic and political issues typified (below) the tough journalism of *The March of Time* series*

British Film Academy and Roger Manvell Collections



porary Historians. His vivid, frankly partisan reporting of the wars in Spain and China, *Spanish Earth* (1937) and *The 400,000,000* (1938), were the first extended accounts of those tragic preludes to World War II to reach the American screen. Even more widespread and influential was the work of the Museum of Modern Art Film Library. Founded in 1935 by Iris Barry, it soon acquired a number of British documentary films and began circulating them to schools, universities and museums throughout the country. Under its sponsorship, Paul Rotha was brought to the States to tour with the films and introduce them to American film-makers. The impact of all these films and personalities gradually effected a broadening and refinement of their concepts and work.

With the appearance of Pare Lorentz' *The Plow that Broke the Plains* (1936), American documentary may be said to have come of age, assimilating the best of the European tradition and adding to it a spacious lyricism that was peculiarly American. Produced for the United States Resettlement Administration, one of the New Deal agen-

cies, it was a dramatic account of the tragic misuse of the Great Plains that led to the disastrous Dust Bowl of the mid-thirties. Like President Roosevelt's famous "fireside chats", this was a report to the nation on its government's efforts to meet the emergency—the first to be made by film instead of by radio. It was followed by *The River* (1937), a broadly conceived history of the Mississippi basin and the changes being wrought by the T.V.A. soil-conservation and flood-control programmes.

The style of these two films was poetic—Lorentz wrote his commentaries in free verse—the approach not only humanitarian but also inherently geographical, dealing as they did with the relationship between man and his environment. Implicit in each was the concern for people, for families blown off their land by the dust-storms or forced to wrest a living from soil worn out by erosion and unscientific cultivation. There was a tragic grandeur in their evocation of the march of history, an honest thrill of pride as they recounted their government's efforts to combat the effects of generations of neglect,

American documentary before World War II worked within narrow theatrical limits uninfluenced by the lively contemporary experiments in Europe until European film-makers came to demonstrate new techniques. Among these was Joris Ivens who made the strongly political Spanish Earth (1937)

ational Film Archive





National Film Arch

*Ivens founded his own production company in the States at the time when American documentary filmmakers were beginning to interest themselves in European and particularly in British documentary methods. He continued his political film-making with *The 400,000,000* (1938) on the war in China*

indolence and waste. These two films, not only pioneers but classics in American documentary, served as the recruiting-ground for many of today's leading documentary filmmakers. No less important, they began to focus public attention upon the form itself. Gradually Foundations, public service groups, even industry came forward in a very tentative way to sponsor production.

The real turning-point for documentary in America, however, came with the New York World's Fair of 1939. Never before had such a variety of fact films been brought together in any one place—sales films, promotion films, art films, travelogue and interest films as well as true documentaries. Crowds gathered throughout the day and night at the British Pavilion, where examples of the British documentary were on continuous display. Equally successful were the American documentaries, shown at the Little Theatre in the New York City Building. Outstanding, of course, were *The Plow that Broke the Plains* and *The River*. But the real hit of the show was *The City* (1939), a film made primarily for exhibition at the Fair by

Willard Van Dyke and Ralph Steiner. Sponsored by the American Institute of Planners, it developed an essentially geographical theme: the change-over of an American community in a single century from a village economy to that of an industrial city. It stated the need for city planning with great technical virtuosity and—what is even rarer in documentaries—considerable humour. By contrasting the peaceful New England scene against industrial slums and hectic glimpses of modern city life, it built a strong case for decentralized “green belt” communities—although, ironically, it never succeeded in making them seem quite as appealing as the ridiculously crowded and eminently human scenes of New York at its worst. The unmistakable popularity of documentaries at the Fair generated a greater interest in the form on the part of both the sponsors and the general audience, resulting in a sudden spurt in production during the years just before the war.

With more pictures being made, the problems of documentary distribution became more urgent than ever. For years the



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Parallel to the work of Ivens, state-sponsored documentary developed under Roosevelt's New Deal in the magnificent and poetic films Pare Lorentz made for the United States Resettlement Administration. (Above) The Plow that Broke the Plains (1936) dealt with the human problems of the Dust Bowl, and (below) The River (1937) with those of soil-conservation and flood-control in the Mississippi

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development of the field had been hobbled by its inability to make contact with the general public. For the most part, the theatres remained closed to such films. They neither conformed to the standard concepts of entertainment, nor were the educational channels through which they were available familiar to the average theatre owner. When he wanted to play an information short, he generally chose a *March of Time*, or perhaps one of the so-called "interest" series of miscellaneous magazine items such as Walter Futter's *Curiosities* or Lyman Howe's *Hodge-Podge*. Beginning in 1939, however, the documentary people instituted a vigorous programme of publicity and information. Through the Rockefeller-financed American Film Center and their own Association of Documentary Film Producers, they sought a wider public for their kind of film-making. And to a degree they found it in the museums, the libraries, the clubs and schools—but rarely in motion-picture theatres.

This inability to break through to the mass audience proved doubly unfortunate. The United States was poised in an uncertain

relationship to a war with which American sympathies as well as interests were becoming ever more closely entangled. As the war drew nearer, the government required hundreds of films to explain to the nation the reasons for a peace-time draft and lend-lease, the story behind America's increased production of tanks and bombers, the need for more women in industry or closer co-operation with the Latin-American countries. But since the government wanted to reach the vast moviegoing public, it turned not to the documentarians but to Hollywood. Through 1940 and 1941 came short after short from Hollywood's writers and directors. Some of these official films were made by the studios, more of them by studio people who offered their services to the emergency organizations set up in Washington. But however good their intentions, it was soon apparent that their capacity to deal persuasively with factual material was sadly limited. Most of their reels were pseudo-*March of Time* style, theoretically glamorized by the narrations of such stars as Ingrid Bergman, Katharine Hepburn, James Stewart

The City (1939) was sponsored for special showing at the New York World Fair in 1939. Made by Willard Van Dyke and Ralph Steiner for the American Institute of Planners, it showed with considerable technical virtuosity how an American village changed in a century into an industrial city

National Film Archive



or Orson Welles. One recruiting film produced by M-G-M actually sought to induce Navy enlistments by showing sailors strumming their guitars while native girls danced on the beach at Waikiki. It was released only a few weeks before Pearl Harbour!

These pseudo-documentaries, distributed by the motion-picture industry's efficient War Activities Committee, were shown in theatres all over the country. The experienced documentary film-makers, on the other hand, were pointedly ignored by the government at this time. Some indication of the official attitude may be deduced from the fate of the Pare Lorentz unit. Organized into the U.S. Film Service, it had continued to produce distinguished documentaries dealing with social problems for various governmental agencies throughout the late thirties—including Joris Ivens' *Power and the Land* (1940), Robert Flaherty's *The Land* (1941)

and Lorentz' own feature-length *Fight for Life* (1940). But to a Congress growing restive under the Roosevelt administration, these smacked too strongly of New Deal propaganda. Early in 1941, at a time when the need for skilled documentarians had never been stronger, the Service was summarily disbanded. Congressionals preferred the less controversial style of the Hollywood people.

After Pearl Harbour, however, film-makers of every description were sought for the various branches of the government's vast information and education programme. In addition to the countless films used in training the armed forces, hundreds more were needed for morale purposes on the home front. Many of these were made for the Office of War Information by Hollywood studios and featuring Hollywood stars. In order to disseminate these films as widely and quickly as possible, 16mm projectors were pressed into nation-wide service on a

One of the last official films to be made in pre-war America was Pare Lorentz' Fight for Life (1940), a feature-length study of maternity welfare in the Chicago slums. Like British wartime documentary, it brought a new, intimate treatment to the presentation of the lives of real people

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Another American skilled in documentary, Herbert Kline, joined with John Steinbeck to make in Mexico Forgotten Village (1941) about health education among backward and superstitious people. This scene is of a woman in childbirth who has been subjected to the spells of a local wise-woman

well-organized "smoke-stack circuit" of factories, union halls, school auditoriums, social clubs and farm granges. Whether at work or in their theatres, the home-front audiences were kept thoroughly up-to-date by the steady stream of informational pictures that flooded the country during the war years.

Of even greater importance to the development of American documentary, however, was the work of men like Frank Capra, John Ford, John Huston and William Wyler, men who left the studios completely to enter on wartime service in the Signal Corps of the Army, the Navy or the Air Force. For most of them it meant a wholly new orientation, a self-imposed course in acquiring the techniques of handling fact on the screen. Their films had two main themes: the events leading to World War II and the issues at stake (these were edited documentaries); and on-the-spot war-reporting. They were widely shown, both at home and to the servicemen

in their camps and bases in every theatre of operations. But there was another notable series of documentaries that, originally, was never intended for American eyes. These were the films produced for the Overseas Branch of the Office of War Information, an organization set up to prepare pictures on life in the United States against the day of Allied victory. The people of Continental Europe had lived so long under Fascist and Nazi rule, had been fed so long on Fascist and Nazi propaganda, that American counter-propaganda had to be ready. To O.W.I. Overseas flocked the men who had been the leaders in American documentary production before the war: Irving Lerner (who became its production chief), Willard Van Dyke, Henwar Rodakiewicz, Irving Jacoby, Alexander Hackenschmied, Jules Bucher, Joseph Krumbold and Sidney Meyers. They evolved a special style that was eminently well adapted to the problem presented to them. Since their pictures would be shown



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Distinguished directors came from Hollywood to supervise many of America's best record films of the war. Using material shot by Service cameramen in battle, they produced excellent films, such as Capra's Why We Fight series and (above) Louis de Rochemont's The Fighting Lady (1944)

in many languages, obviously dialogue could not be used. They depended instead on a strong, clear narration, on visually striking, indisputably authentic images and exceptionally skilled editing. A musical score, often prepared by such leading modern composers as Aaron Copland, Alex North or Virgil Thomson, completed the picture. For foreign distribution, the narration was simply translated into the appropriate language.

Quite apart from such stylistic considerations, the films of O.W.I. Overseas were

differentiated from the productions of the War Department and O.W.I. Domestic in a far more basic way. The reels prepared for the troops and the home front were related to the progress of the war; their whole effectiveness lay in their timeliness. It was not, however, the passing moment that the Overseas unit sought to record. Its purpose was to discover the typical and the enduring—the elements in American culture that had grown from its European heritage as well as those that might contribute to the post-war

development of the liberated nations. The result was a series that included films like *Tuesday in November* (1945), a lucid explanation of the American electoral system; *A Better Tomorrow* (1945), examining the role of free education in the New York public schools in moulding future citizens; and *The Cummington Story* (1945), a true and touching incident in which a group of European refugees were welcomed and integrated into the life of a New England town. There were films on the public health services, the T.V.A. dam projects, the Library of Congress, the historic San Francisco conference where the United Nations was born. It was a priceless collection, and one that the American people might never have seen had not the documentarians themselves urged their distribution at home. Released now at print cost through the U.S. Office of Education, they have become the backbone of many of today's school and university film libraries—and are still going strong. They are also distributed abroad free of charge by the U.S. Government through its much-used Information Service Film Libraries.

After the war, both the Army and the State Department, through its Information Service, extended the policy of O.W.I. Overseas, commissioning films that continued to bring alive the American scene for the peoples of Europe and Japan. Again it was predominantly the documentary film-makers who created these pictures of America's cultural, intellectual and regional life in films like *Journey into Medicine* (1947) or *Land of Enchantment* (1948), a portrait of New Mexico as seen through the eyes of the artist Georgia O'Keefe. Meanwhile, the Hollywood people returned to the studios, taking with them their new techniques for handling reality on the screen. Louis de Rochemont, creator of *The March of Time*, had already introduced the documentary approach into the entertainment field with his anti-Nazi spy film, *The House on 92nd Street* (1945). A reenactment of an authentic case out of the files of the F.B.I., it was staged against the actual backgrounds of the original story. The success of this experiment, which for de Rochemont has since hardened into formula, led to an increased use of 'location' shooting on what were essentially studio films. Directors of ordinary cops-and-robbers pictures like *Naked City* (1948) or *Union Station* (1950) found it definitely advantageous to take their cameras and crews to New York's lower East Side or the Los Angeles depot. The real backgrounds lent a note of authen-

ticity to their melodramatic plots. Documentary—or at least semi-documentary—had entered into the ordinary parlance of Hollywood.

During the years immediately after the war, the outlook for documentary in the United States was brighter than ever. The wartime use of films had removed any doubts as to the efficacy of the medium in influencing public opinion. In education, tests had proved that men could master a process at least one-third faster if they saw it demonstrated first through motion pictures. An estimated 400,000 16mm projectors had created an unprecedented market for non-theatrical films. The schools were setting up elaborate audio-visual programmes. Government, private industry, text-book publishers, Foundations all came forward as potential sponsors. John Grierson arrived in New York to prepare a documentary series, *The World Today*, for theatrical release. When Robert Flaherty's feature-length documentary, *Louisiana Story* (1948), began playing the art house circuits, it seemed to presage a whole new era for the documentary film. Financed by Standard Oil and produced with unprecedented freedom at a cost of \$250,000, it was a model of institutional film-making. The picture's warm reception and the sponsors' expressed satisfaction added to the general optimism of the documentarians. They felt that the value of their kind of film-making, their approach to reality, was at last receiving public recognition and support. They envisaged a future in which the documentary would become as effective in peace as it had been in time of war. Unfortunately, their hopes have yet to be realized.

Just what went wrong is difficult to say. Certainly, the rise of television drained off vast sums of money that might otherwise have been spent to sponsor institutional documentaries. TV's adverse effect on the movie box-office also touched the documentarians: the market for shorts fell off so sharply that not only was the Grierson project scrapped but even the well-endowed *March of Time* was forced off the screen. Also since the war, in the interest of economy, both the Army and the State Department drastically curtailed their film-production programmes. Documentaries, of course, continue to be made in the United States, dealing mainly with particular medical and social problems and financed by the Foundations or, sometimes, from public funds. In recent years television has also initiated a number of



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Since the war fictional films, usually with a background of crime or violence, have often been presented in a documentary manner and photographed on location. Among the best were de Rochemont's spy film (above) *The House on 92nd Street* and (below) Dassin's film of homicide in New York, *Naked City*

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By courtesy of Walt Disney Film Distributors Ltd

American documentary production is un-coordinated, and sponsorship is haphazard. Walt Disney has had great success with his True Life series of nature films, including The Vanishing Prairie, the story of the grassland animals' fight for survival on America's formerly vast prairieland

documentaries, notably for such cultural programmes as the Ford Foundation's *Omnibus and Adventure* (produced by the Museum of Natural History in New York), or for public service features like the National Broadcasting Corporation's *Project XX* and the Columbia Broadcasting System's *Search*, a survey of scientific achievements in universities and research centres throughout the United States. Unfortunately, television's frantic production schedules, limited budgets and tiny screen are not particularly conducive to the kind of creativity that was once implicit in the documentary idea.

At present, inspired production is both scattered and sporadic. Increasingly, the documentarians have had to support themselves by routine commercial assignments tailored to rigid sponsor specifications. In the struggle for such contracts, they have all but lost sight of their original goal. At its best, during the depression years and the war, the documentary movement was characterized by a dedication to social change and public enlightenment. Now, in time of peace and prosperity, that spirit seems to have ebbed

away. Though there is still much to be learned, much to be said about the world and its people, the documentarians are no longer taking the lead in saying it. Without direction, lacking both leadership and enlightened sponsorship, they have become increasingly identified with technically proficient, uncreative industrial films whose main purpose is to promote a product or present a corporation's point of view.

It almost seems as if it takes a time of stress or crisis to crystallize the inherent strength of the documentary: its ability to build understanding in an increasingly complex world by revealing the relationship of man to his society, to his institutions, to his fellow-men and to his environment—that relationship which is Geography's primary theme. For true documentaries are concerned less with facts than with *meaning*. Mrs Flaherty likes to call them Films of Life, and in the deepest sense this is precisely what they are—life made meaningful by the creative film-artist. Their present eclipse can only be temporary. Documentary is too important a form to disappear entirely from the screen.

Western Australia: The "Cinderella State"

by DON WHITE



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The discovery of oil in 1953 at Learmonth (above) in Western Australia was the cause of great excitement and much optimism, since if Australia can be said to lack anything it is oil. Though the optimism has yet to be justified by further finds, the "Cinderella State" has many other economic resources that enable it to take an important part in the prosperity of the Commonwealth

EARLY in 1829, a ship racing against time and the French hove to off the west coast of Australia. Captain Charles Fremantle and his men went ashore and took possession of New Holland in the name of George IV. On the King's birthday in August, three months later and twelve miles due east, Mrs Dance cut down a gum-tree. From these humble beginnings the State of Western Australia evolved. Today, Captain Fremantle's choice of landing-place is known as the Gateway of Australia and from the wood-chopping antics of Mrs Dance has grown Perth, the State capital.

For the majority of visitors to Australia, Fremantle is their first and last sight of the Sunshine Continent and to many the introduction to Western Australia. Travellers usually approach Perth as I did on my first visit in 1953, along the great highway that perpetuates the name of Governor Stirling. This passes the University, an imposing building in beautiful grounds but especially noted as the only free university in the country; and a great deal of the journey is along the lovely riverside drive with the placid waters of the Swan on one hand and on the other Mount

Eliza and Kings Park: a thousand acres of virgin bushland sweeping into the city itself. Perth viewed from Kings Park is a scene with few equals in the whole of Australia. The tiny settlement that Mrs Dance knew has indeed changed. Marshy shores have developed into a city of fine buildings, broad thoroughfares and spacious parks.

Perth is a happy city and the people of Perth, affectionately known throughout Australia as "sandgroppers", are a happy people. Perth lives—and a very large proportion of its population sleeps—outdoors. At week-ends the city is deserted and the workers and their families flock to the beaches, the hills, the parks and the racecourses. Perth has a charm and dignity not enjoyed by other Australian capitals. The pace of living is slow, easy and unhurried. It was this way of life that helped to earn Western Australia the title of "Cinderella State", as well as more profound reasons such as its isolation, its meagre population and the fact that it preferred to rest on its agricultural laurels while its sister States forged ahead with heavy industries.

In October, 1956, I returned to Western Australia. I had heard of great changes,



By courtesy of the Western Australian Government Tourist and Publicity Bureau

(Above) The approach to Perth: Stirling Highway, made in the 1930s between the capital of Western Australia and Fremantle its leading port. (Below) The buildings of the University of Western Australia. Founded in 1911 and maintained by government grant, it is the only free university in the Commonwealth

By courtesy of the Western Australian Government Tourist and Publicity Bureau





Illustrations Ltd, Perth

The city of Perth owns some 5700 acres of public lands. Kings Park, seen here, occupies 1000 acres, most of which has been left in a virgin state with seven miles of roads running through it

rumours that Cinderella had found a fairy godmother. They were true. At the end of 1953 Perth was caught up in a fever-pitch of excitement. On the lips of all, young and old, business-man and office-boy, was one word: oil. One of those to benefit from the sudden boom was a young junior accountant working for an oil company. "Early in 1949 they first started prospecting for oil up North", he said. "It wasn't until four years later that the first oil rig was transported by road to Learmonth, the site selected. My senior accountant advised me to buy all the shares I could afford, so I sold my motor-cycle for £50 and invested it in 5s. shares." He turned out to be a very lucky boy. Within six months the first oil rig to 'spud in' struck oil. It was high-grade crude oil and coming through at the rate of 20 barrels an hour—over 17,000 gallons a day. He sold each 5s. share for £7. The eminent nuclear physicist, Professor Harry Messel, summed up the discovery in a press interview. "Water, uranium, oil," he said, "now you have everything . . ."

But according to old Dave, the odd-job man at Undercliffe Rest Home, situated outside Perth in the Darling Ranges, the oil boom was nothing compared to Western Aus-

tralia's first big boom. Dave, who is a first-generation Australian, is surprisingly young for his eighty-five years but a little less energetic than he must have been in 1890. "That was the beginning of the West's ten most glorious years," he recalls. "That was when young John Forrest began his administration. There was another word on everybody's lips then: gold. In '91 it was discovered in Murchison, in '92 in Coolgardie and in '93 Paddy Hannan discovered the Golden Mile at Kalgoorlie—they called it Hannan then. What a rush that was . . ." and you're there with him as he reminisces about days long since gone. "People flocked in from all over the country, from all over the world. Within five years there were more people in Kalgoorlie than there are living there today! At that time it was a sprawling town of tents and shacks. What hardships and discomforts men and women are prepared to suffer, lured on by the thought of easy money . . ."

Things have changed since Paddy Hannan first made his discovery in that bleak, waterless waste on the edge of the Nullarbor desert which, nevertheless, still produces 75 per cent of Australia's gold. A prosperous city stands on the site of those tents and shacks and in the



By courtesy of the Western Australian Government Tourist and Publicity Bureau

(Above) The view of Perth from Kings Park, along the banks of Swan River: "a scene with few equals in the whole of Australia." (Below) Hay Street, in the busiest part of Perth, with the entrance to the Tudor-style shopping-arcade, London Court, on the right. Perth was constituted a city in 1856

W.A. Newspapers Ltd





(Left) The statue of Paddy Hannan in Kalgoorlie: his water-bag is a drinking-fountain. The Golden Mile at Kalgoorlie, discovered by Hannan in 1893, was the foundation of much of Western Australia's prosperity, and the State still produces three-quarters of the Commonwealth's gold, though reef-mining has now taken the place of the alluvial gold of Hannan's day. (Below) Kalgoorlie developed as a township after the discovery of gold in the area. It is now combined with Boulder City as the urban centre for the East Coolgardie Goldfield, the State's richest gold-producing area.

By courtesy of the Western Australian Government Tourist and Publicity Bureau





courtesy of the Agent-General for Western Australia

Perth's position on the edge of the Nullarbor Plain, the vast waterless desert which stretches for 300 miles across southern Australia, made it impossible to develop the goldfields without water. A far-sighted scheme was carried out in the 1890s to bring it (right) a 350-mile pipeline from (above) the Mundaring reservoir not far from Perth. Eight pumping-stations raise the water 1280 feet and send it through 1793 miles of pipes to serve 10 townships. The weir has since been raised so that the wheat-growing country to the north can also be supplied



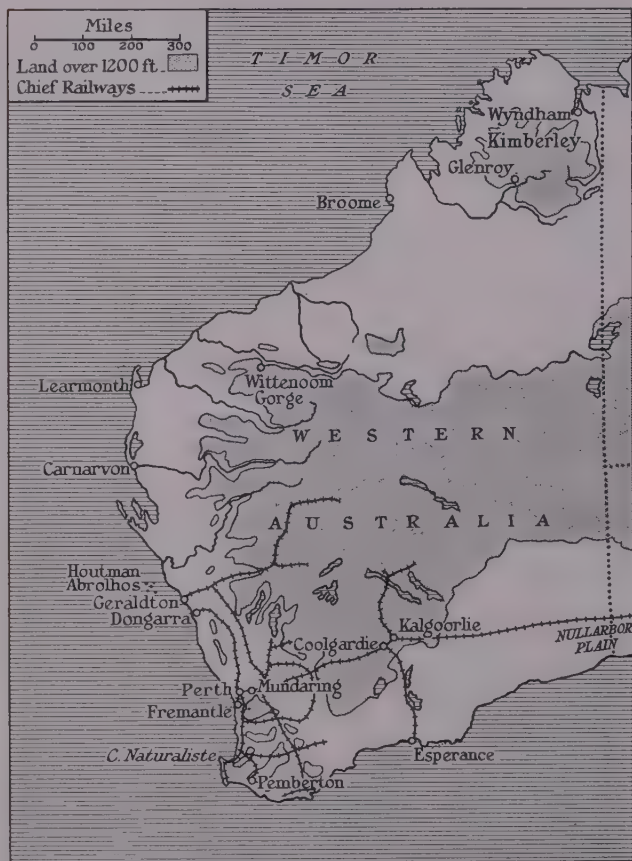
centre of it the people of Kalgoorlie have erected a fountain—a statue of Paddy Hannan holding his pick and his water-bag. But I cannot mention the ‘richest square mile in the world’ without also mentioning its lifeline, the famous Goldfields Water Supply Scheme. I spent a week in the ‘outback’ on Pumping Station No. 8, a small settlement of about nine men who run the station, their wives and their children. I was the guest of Harrie Ausburn, who worked on the pump, and his wife, the novelist J. A. Graice. Mrs Ausburn laughed when I commented on the loneliness and the hardships in this remote spot, seventy miles from a cinema and twenty from a glass of beer. “Who has time to be lonely with a husband on shift-work to look after and two imps (aged eighteen months and three years) like mine to keep out of mischief?” she said; and her blond imps—at that moment happily stealing scraps from the chickens—certainly seemed plump and content enough. “We have no more hardships to speak of than city-dwellers.

Our water is free and for a nominal charge we can use the pump’s generated electricity. Groceries are delivered once a month and vegetables once a week from Coolgardie. My only hardship was learning to bake my own bread.” She grinned wryly. “And you’d be surprised how much there is to gossip about amongst nine women!”

Harrie tried to give me some idea of the scheme. It dates—once again—from Western Australia’s ‘ten glorious years’ when in 1893 C. Y. O’Connor, who also designed and built Fremantle Harbour and a number of other important public works, approached John Forrest with a scheme to pump water 350 miles from an impounded reservoir to the Golden Mile. “Taking all factors into consideration”, said Mr Ausburn, when he showed me over the station, “the project was a very daring conception. You need little imagination to visualize the difficulties of supplying that great influx of gold-seekers with water in a hot and practically waterless

area more than 300 miles from the coast.” Even today the statistics are staggering; how much more so, then, must they have seemed at the turn of the century. A reservoir was built at Mundaring, twenty-six miles east of Perth, with a capacity of 4,650,000,000 gallons. This water had to be lifted 1280 feet by eight pumping-stations through conduits of 24 and 36 inches. It was a fantastic idea and I was not surprised to learn that there was a great amount of criticism and even antagonism. Some idea of the immensity of the project can be gained from the fact that if the pipeline began at Perth in Scotland and extended southwards, it would end in Piccadilly Circus! Just before its completion in 1903, critics turned their fire on O’Connor himself, accusing him of dishonesty and misappropriation of funds. Certain of the failure of his scheme, he committed suicide.

“As mining declined, farming intensified,” Mr Ausburn explained briefly. “The first 150 miles of the line, remember, run through mixed farmlands and nowadays there are



A. J. Thornton



W. A. Newspapers L.

The forests in its south-western corner provide Western Australia with another important industry. They cover 20,000,000 acres of which 3,000,000 carry merchantable timber, including the tall karri and jarrah trees. Both are eucalypts, extremely hard, durable and rot-proof and are a valuable export

By courtesy of the Western Australian Government Tourist and Publicity Bureau





W.A. Newspapers



Illustrations Ltd, Perth

Australian vegetation as a whole has a marked individuality, many species being survivors from the remote past. Conspicuous among the multitude of curious plants are the blackboy (above) or, as they are also called, Australian grass-trees (a species of *Xanthorrhoea*). (Left) The Kangaroo-paw (*Anigozanthus manglesii*) has been called "the most fascinating flower of Western Australia". There are eleven distinct varieties: one is emerald green with red stalks, another is tinged with yellow and green, while the rarest is black.

many extensions of the pipeline to fresh country. I would say that reticulation from this pipeline now covers more than a million acres."

From Kalgoorlie I directed my attention to the South-West. In this area are the great sheep, wheat, dairy and orchard belts of the State. But my interest lay less in these belts, common to Australia as a whole, than in the famous jarrah and karri forests which are peculiar to the West. In the heavy rainfall district centred at Pemberton is the great State Reserve forest: more than 3,000,000 acres of these trees, two of the hardest woods in the world. In the form of road-blocks, the streets of London are paved with them. A height of 250 feet is common amongst the karri trees and the tallest reaches 287. This region is rich in trees—eucalypts, banksias with their odd red and yellow flowers, wattles and blackboys: stunted, primitive growths, the oldest of trees. These and the wild-flowers of Western Australia are world-famous; many for their intrinsic worth, others for the brilliance of their blossoms. Few other countries can boast such a wealth of colour, the colour blue being unusually predominant. The varieties of flora in the State number approximately 7500, making it one of the richest floras in the world and including half the known families of flowering plants! Many—common enough in the South-West—seem strange and primaeval to the European visitor; such as the Kangaroo-paw, a remote relative of the daffodil, the *Rhizanthella* orchid that will only grow underground, the flowers of the Blanket plant or Lamb's-tail that are covered with white or purple wool and other intricate feathery flowers and rare orchids. It is a botanist's paradise.

In this setting of forest and farmland the limestone caves of Western Australia are situated, close to Cape Naturaliste. Some fifty miles of coastline from north to south are honeycombed with subterranean galleries that prove a year-round draw for tourists.

There are surprisingly few aboriginals in the South. I, personally, saw none. Barbara Donnelly, a young shorthand-typist from Perth with whom I visited the caves, gave me this reason. "The full-blooded natives are supported by the government in state reserves mainly in the North, but we are taught in school to believe that the destiny of natives of aboriginal origin lies in their ultimate absorption by the people of the Commonwealth."

I spent a hot, sultry Christmas with an English immigrant family typical of the many streaming into the State. Ben Haviland, a railway fitter, formerly of Cranleigh in

Surrey, and his wife Ethel were only too pleased to give me their opinions on their new home. "We left England five years ago, when I was thirty-five," says Ben. "We spent several years in the Eastern States before deciding to settle in the West. It was a decision we have never regretted. Now we are well on our way to owning our own home. I think this is a wonderful country and I know there are thousands of British boys in the Old Country who could make good out here. We are all settling down to the Australian way of life pretty well—even though the wife does get a bit homesick. The kids are happy. Our children can do nothing but benefit from our coming to this young country." And Ben's words are echoed by most of the immigrants I spoke to, both British and European.

The Havilands' eldest son, David, was eager to take me aside and tell me about his first big job. He was due to start in a matter of days. David, at seventeen, is a handsome, strapping boy who has been studying veterinary science. He hopes to finish his education at the university and become a veterinary surgeon. "I'll be working up North," he told me excitedly, "up in the Kimberleys, on a million-acre station."

You have to talk big when you discuss the North, because it is big. North of the Perth-Kalgoorlie pipeline lies more than 500,000,000 acres of land. Two-thirds of it are arid desert, but in that other third industry is thriving. North of David's station is Glenroy. There an experiment in meat-supply is attracting international attention. An inland abattoir complete with chilling-chambers has been set up. Cattle are being slaughtered, dressed, chilled and flown to the State Meat-Works at Wyndham, ready to be shipped overseas. This replaces the old practice of droving the cattle overland to the meat-works, so saving many cattle and much time. Further south is Broome, the centre of a small pearling industry, and Carnarvon which during the season from May to October is the home of Western Australia's whaling industry. Each humpback brings in £1500 and the permissible catch of 1200 is always attained by the end of October. Two hundred miles inland another prominent industry has sprung up. Wittenoom is one of the State's newest towns and owes its existence to the recent discovery of vast quantities of blue asbestos, the yield of which, in the considered opinion of one official I spoke to, will eventually exceed that of gold won in Western Australia.

Geraldton is 300 miles north of Perth, a pretty coastal town favoured with a Mediterranean climate and showing the influences of

settlers from Mediterranean countries. The town's Roman Catholic cathedral is a miniature version of the great Duomo at Florence. The main purpose of my visit was to seek information about the industry that produces 'the finest crayfish in the world'. From here and Dongarra, further south, frozen crayfish (or rock-lobster) tails—actually the abdomens—are exported to Britain and America. Dongarra crays are a delicacy and luxury in which I revelled during my stay. But cray-fishing, I learned, is a hazardous calling, for the boats are small and the seas are rough. My visit coincided with the close of the 'running of the white crays'. On the Abrolhos Islands, a small group of coral islets just off Geraldton, I spoke to a Greek fisherman. "It becomes more difficult each year," he told me, "for more and more ships are joining

the cray-fleets. This season the banks became congested with boats which had to weave around the floats of other boats' pots in order to pull in their own. Soon there won't be enough crays to go round for we are limited to 2,000,000 pounds." His wife, a dark buxom woman with large black eyes, asked me not to forget the wives. "We wait here every day with our children, in the heat and the glare. We live in the sandhills with only the flies and each other for company," she said. "Always we are worrying in case one day the right sail may not turn up." The fisherman laughed and turned his creased, sun-burned face to mine. "And what is the first greeting we receive—even before we are safely on shore?" He waved his hand in a deprecating gesture. "'How many bags did you get . . .'" And with current prices at £10 a bag, it is an

Blue asbestos is mined at Wittenoom Gorge in the Hammersley Range, an arid region 700 miles north of Perth. Total production is already worth over £500,000 a year and is expected to be doubled

By courtesy of the Australian News and Information Bureau





By courtesy of the Western Australian Government Tourist and Publicity Bureau

The coastal industries of Western Australia include pearling at Broome, whaling at Carnarvon and Point Cloates and crayfishing at (above and right) Geraldton and Dongarra. Crayfish 'tails', a great delicacy, are frozen and exported. The crayfish industry, though hazardous, is lucrative and is tending to become overcrowded





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The latest project of the Western Australian government is a land-development scheme at Esperance, on the south coast. With the rapid increase in population, new agricultural land is an urgent need

unlucky man who takes less than five in a day.

In 1856, when a bishopric was founded by Royal warrant, Perth was constituted a city. I returned in time for the centenary festival which was being celebrated with a series of concerts by Western Australia's own Symphony Orchestra, sporting events and performances by such internationally-known entertainers as Katherine Dunham's troupe of dancers and the Classical Theatre of China. I spent my last evening at the home of the Very Reverend John Bell, the Dean of Perth. His flat overlooks the city and that part of the Swan known as Perth Water. From his dining-room window we could see the beginnings of the projected 1188-foot-long, three-span bridge crossing the Narrows, that will link the city even closer with its southern suburbs.

The Dean came to Australia from Scotland thirty years or so ago. "I arrived in the depression years," he said, "when things were really tough for the working man. The lack of employment meant many an empty belly; but today the standard of living is exception-

ally high."

The working man in the street corroborated this. Eric Wilson, a State Insurance employee, insisted that I help him empty a glass to celebrate my imminent departure. "In 1956 the government raised the basic wage to more than £13 a week; they introduced legal betting-shops. Our own Shirley Strickland won three gold medals at the Melbourne Olympics and Western Australia was considered qualified to enter a team in the inter-State Sheffield Cup cricket contest." He lifted his glass. "And Western Australian beer's the best in the world."

1957 brought the promise of even greater prosperity for the State, with negotiations between the government and the Chase Syndicate of America to open up a vast tract of land around Esperance on the south coast. Already, teams of bulldozers and tractors are at work clearing and ploughing the land which will eventually be divided into farm-holdings and sold to selected applicants.

I recalled Ben Haviland's words: "Our children can do nothing but benefit . . ."